

Figure 1. Chemical synthesis of Oligonucleotides

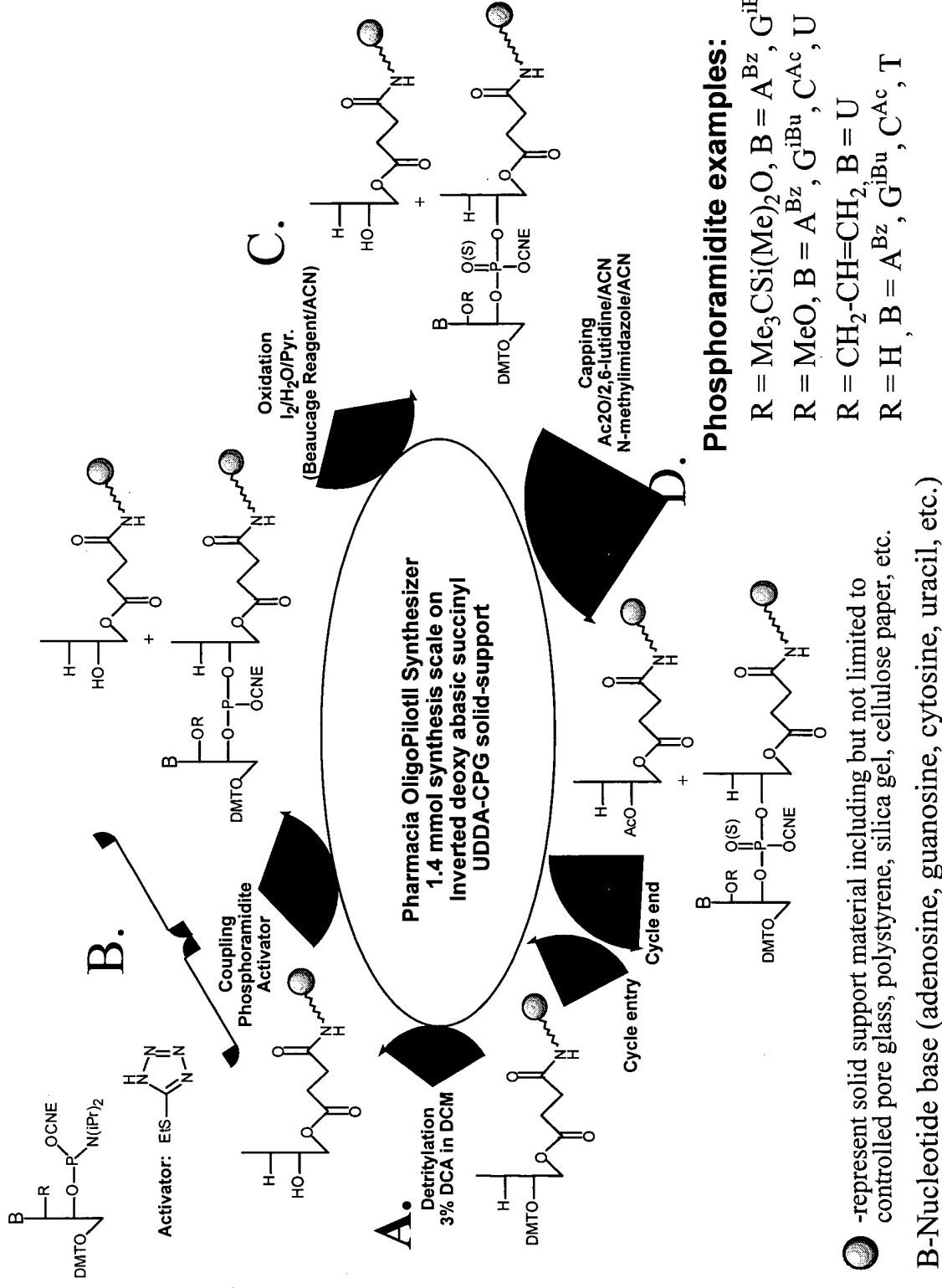


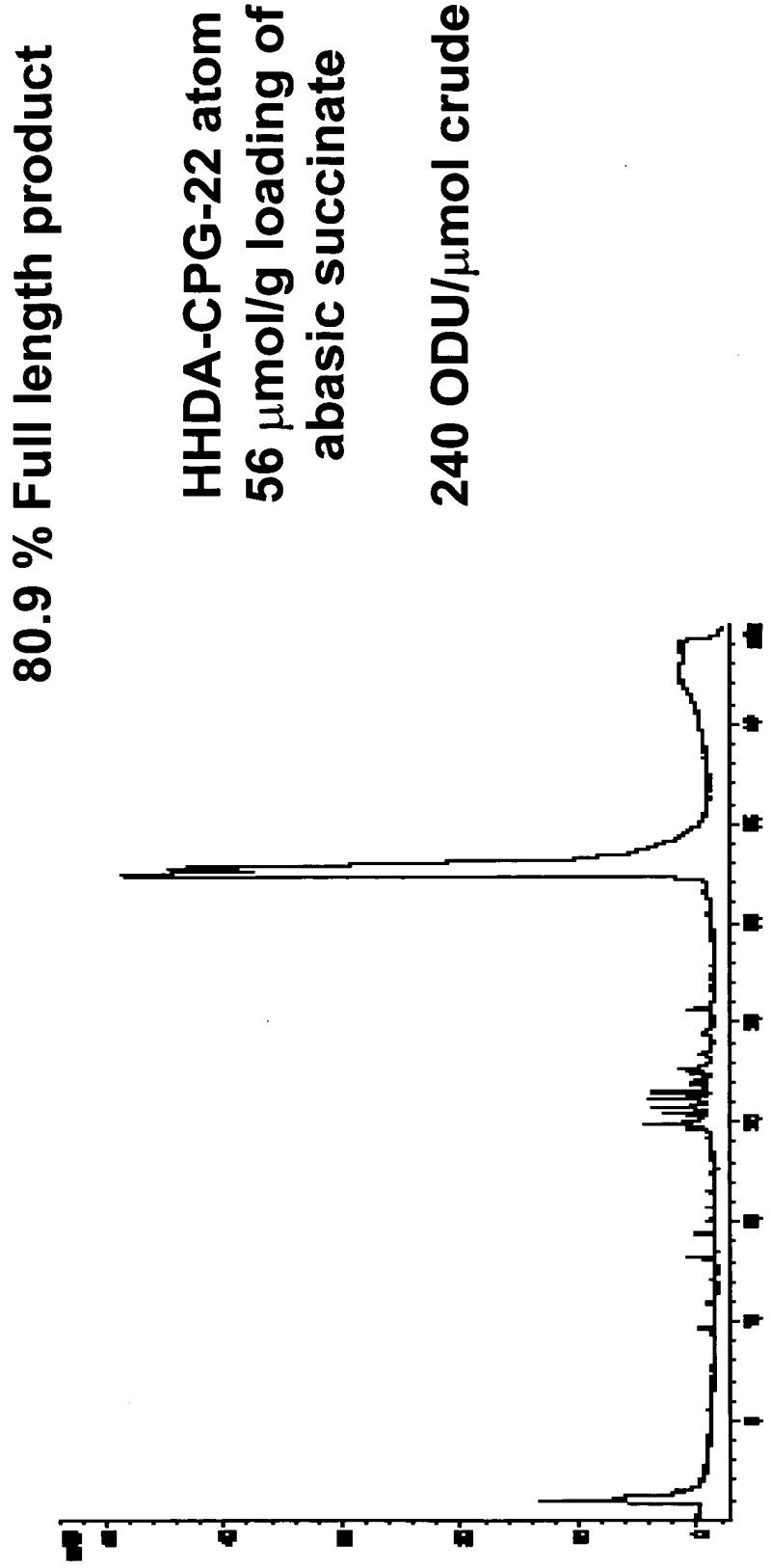
Figure 2

<u>Chemical Structure</u>	<u>Alias</u>	<u>Product Yield</u>	<u>Efficiency</u>
	22 atom CPG, HDDA CPG	230 - 240 ODs/umol	80%
	20 atom CPG, UDDA	270 - 280 ODs/umol	78-80%
	19 atom CPG, PEG CPG	280 - 290 ODs/umol	85-87%

ODMT- dimethoxytrityl

-represents controlled pore glass (CPG)

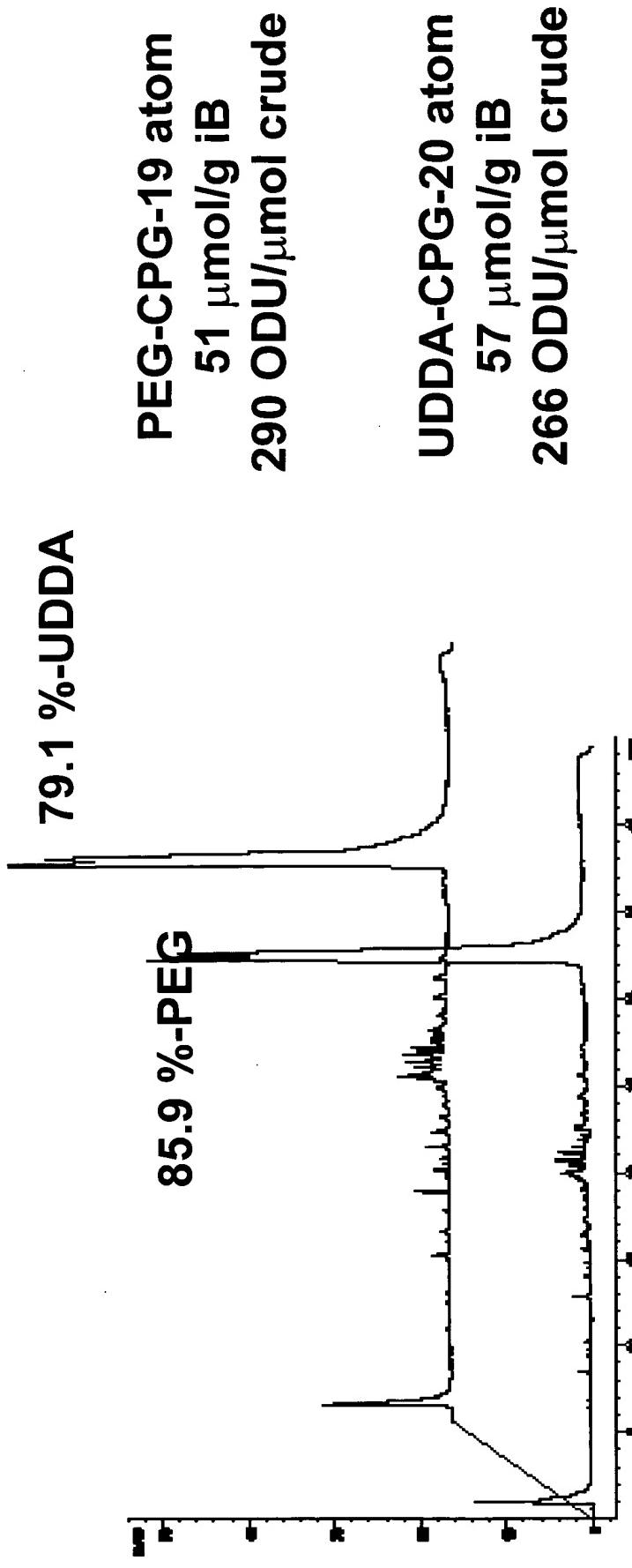
Figure 3. HPLC chromatograph of Ribozyme synthesized using CPG Linked HHDA Spacer



Ribozyme Sequence: g_sa_sg_su_sugcUGAuGaggccgaaaggccGaaAgucugB

Lower 2'-O-methyl modification
U-2'-C-allyl
S-phosphorothioate
B-3'-3' inverted abasic moiety
A,G-adenosine, guanosine

Figure 4. Synthesis of Ribozyme on CPG linked PEG and UDDA Spacers



Ribozyme Sequence: g_sa_sg_su_sugcUGAUGaggccgaaaggccGaaAgucugB

Lower 2'-O-methyl modification
U-2'-C-allyl
S-phosphorothioate
B-3'-3' inverted abasic moiety
A,G-adenosine, guanosine

Figure 5. Synthesis of CPG linked HHDA CPG (22 atoms) Spacer

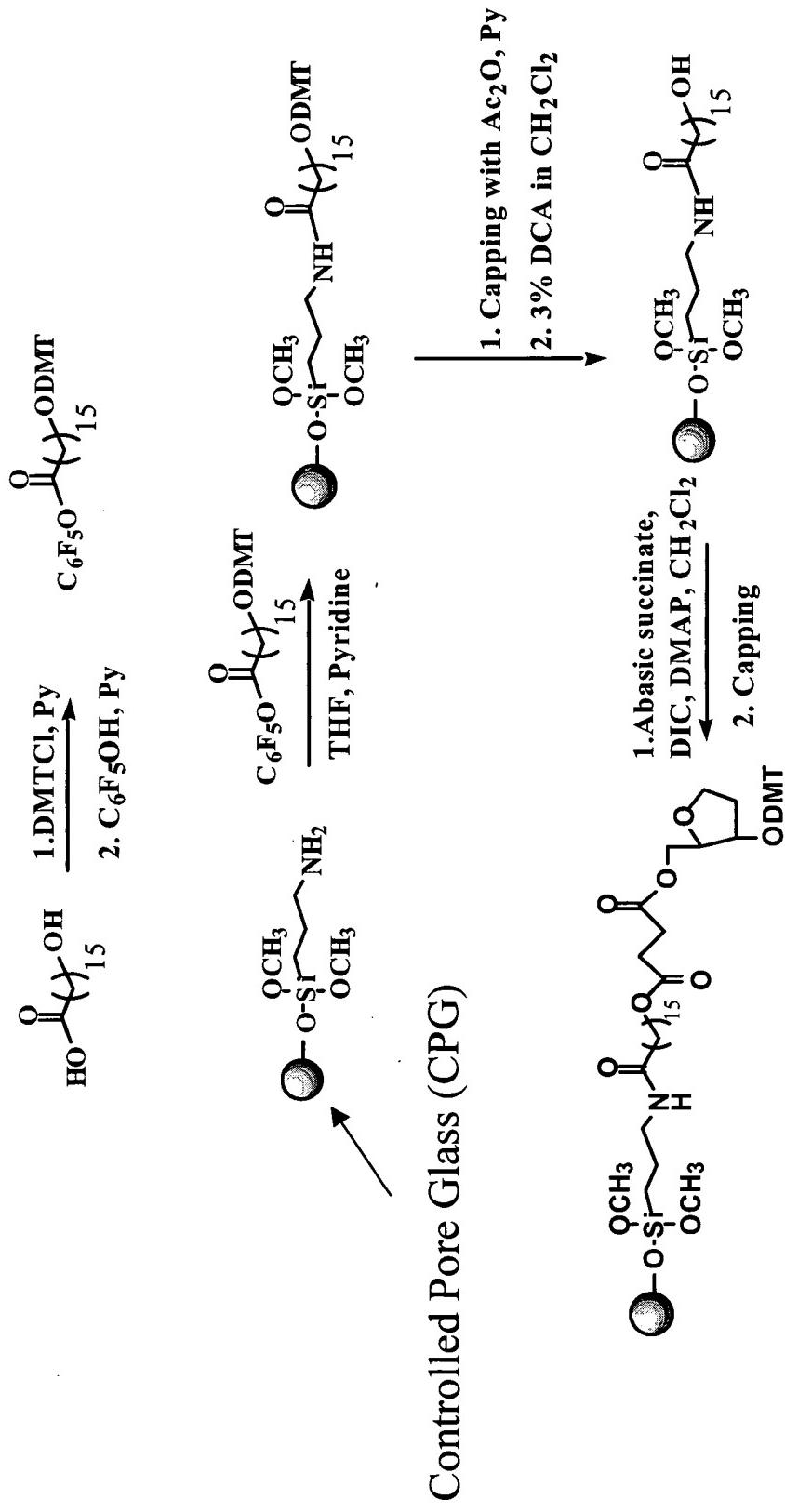


Figure 6. Synthesis of CPG-Linked PEG (19 atoms) Spacer

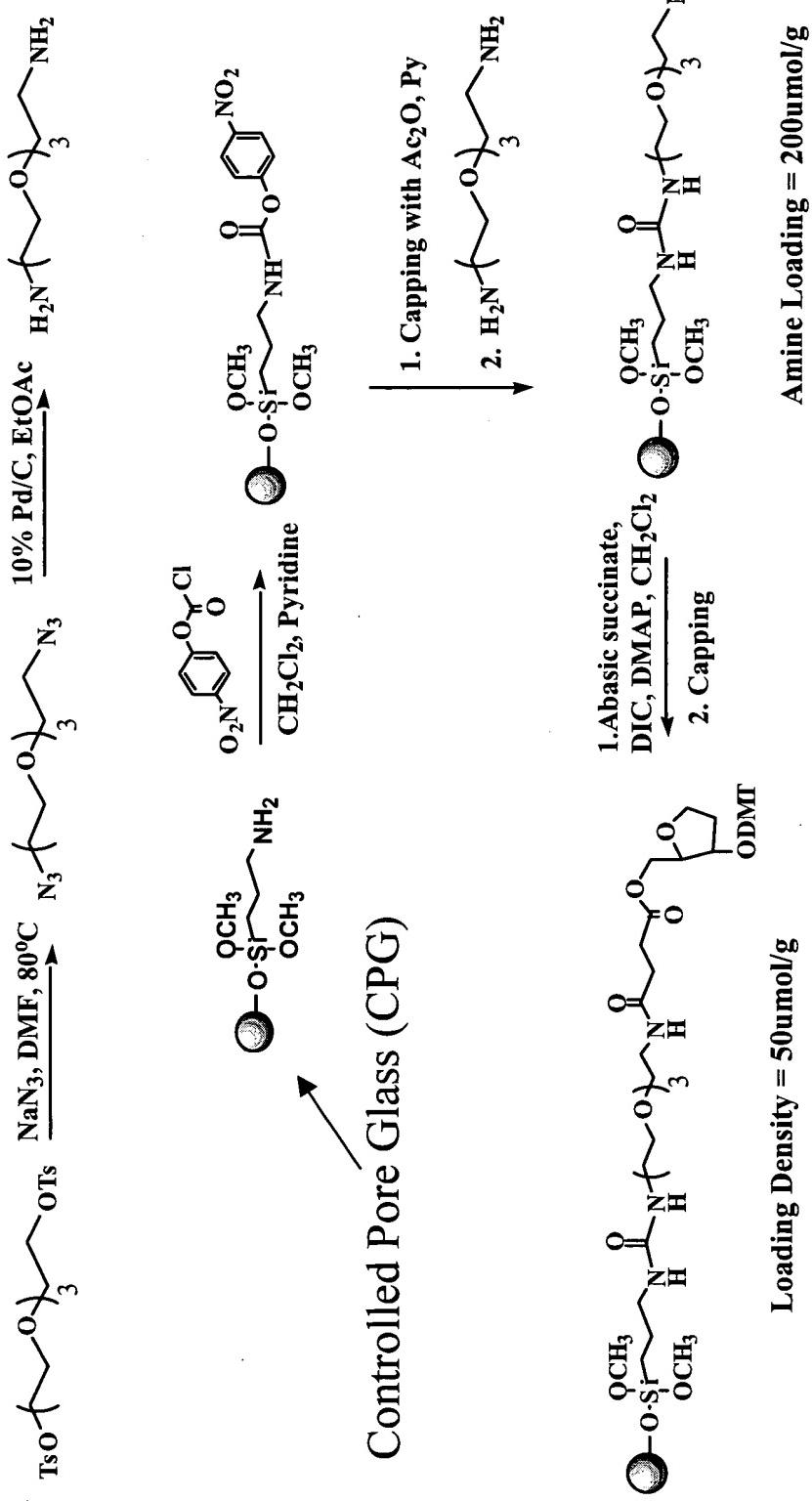


Figure 7. Synthesis of CPG linked UDDA Spacer

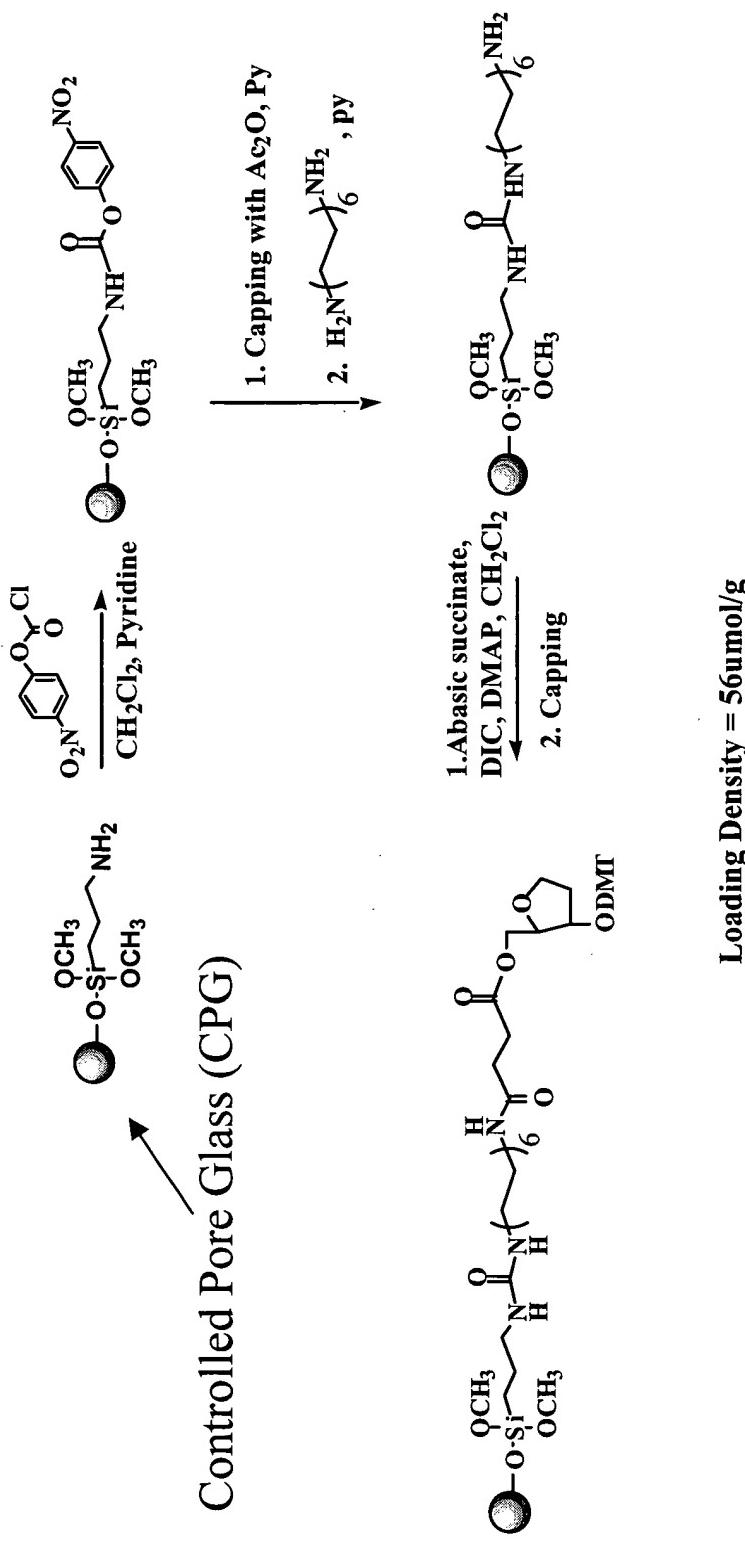
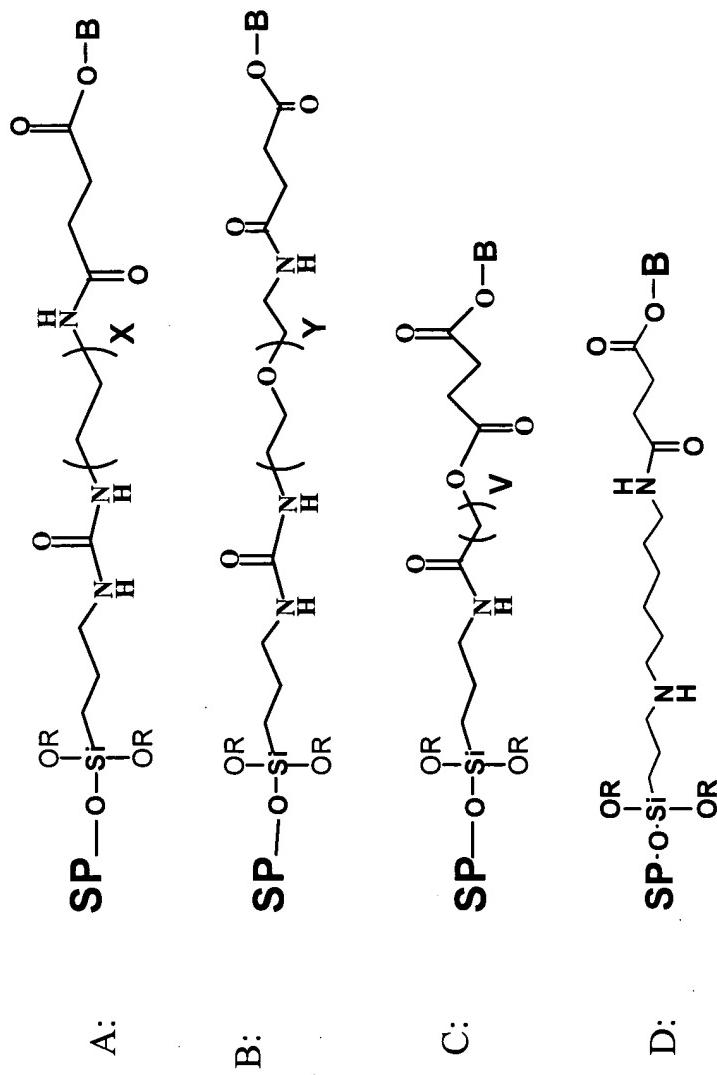


Figure 8. General Chemical formulae for Spacers



SP- solid support

B- terminal chemical group

X- integer between 2 and 6 (i.e. 2, 3, 4, 5, 6)

Y-integer between 1 and 4 (i.e. 1,2,3,4)

V-integer between 5 and 16 (i.e. 5,6,7,8,9,10,11,12,13,14,15,16)

R- represents a moiety selected from a group comprising alkyl, alkenyl, alkynyl, aryl, alkylaryl, carbocyclic aryl, heterocyclic aryl, and the like

Figure 9: Synthesis of abasic derivatized C9 CPG

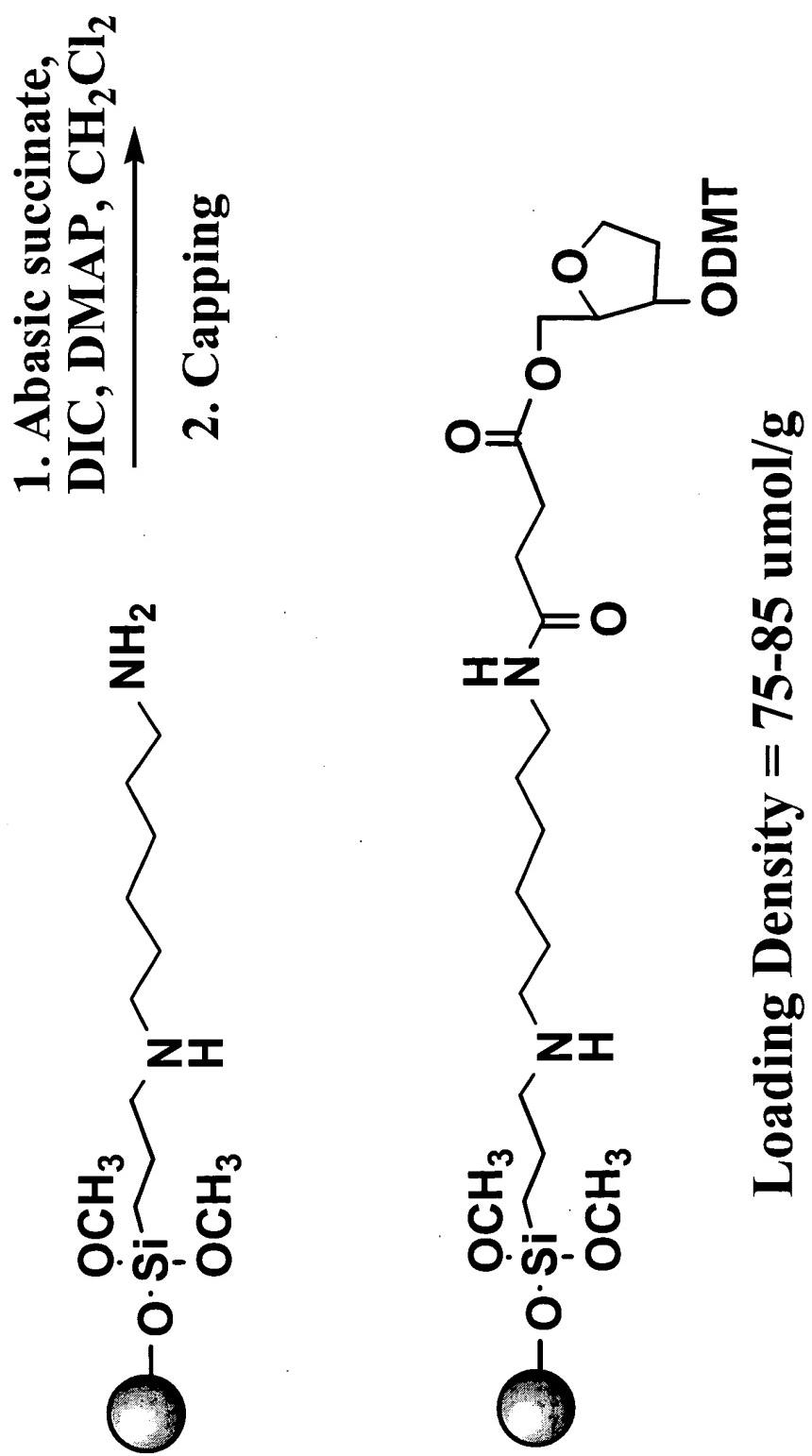


Figure 10: CGE of Crude AngiozymeTM Synthesized on C9 CPG

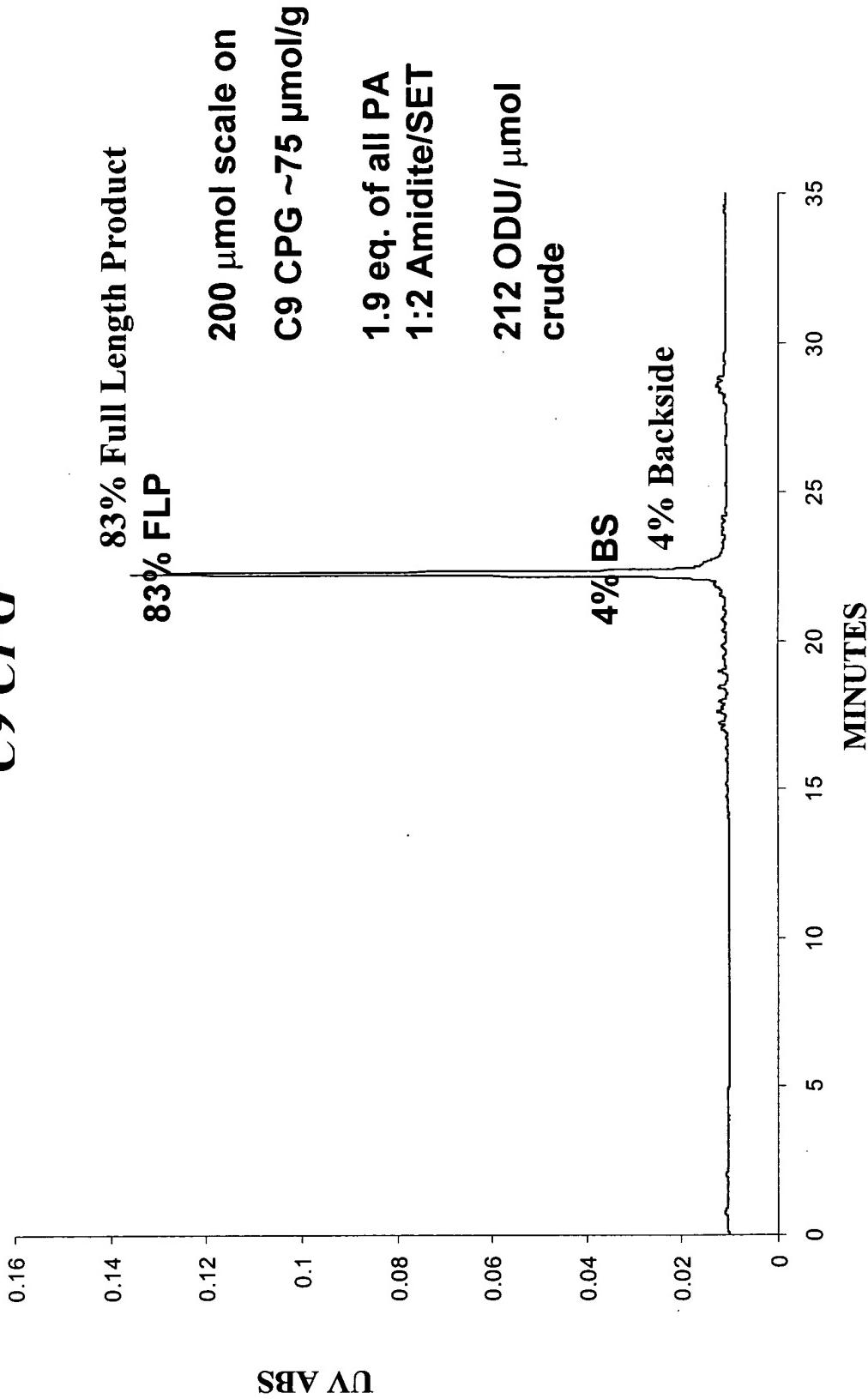


Figure 11: Chemical Synthesis of Oligonucleotides, *in situ* Phosphoramidite

